

## Case Report

# Consequences of Severe Epileptic Attack in a 3-year-old Girl with Congenital Hydrocephalus

### Abstract

A 3 year old female patient with history of congenital hydrocephalus and epileptic episodes since a week was referred to the department from Dhiraj general hospital for dental opinion. The patient was non ambulatory. On initial clinical examination grade II mobility was present with lower anterior teeth along with lower lip laceration and an extra oral swelling on the left side of the face. Pharmacological management was opted for this patient as regular chair side management was not feasible. The necessary investigations were completed. When the patient was taken under general anaesthesia for treatment, a radical symptomatic and preventive treatment was opted. Such cases pose a challenge to the Pedodontist's decision making skills and must be dealt considering the long term health benefits.

**Keywords:** *Avulsed teeth, modified tissue guard, odontoplasty, oral injuries*

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### Introduction

Congenital hydrocephalus is a rare condition, where buildup of excess cerebrospinal fluid occurs in the brain at birth. This extra fluid can increase pressure in the baby's brain, causing brain damage and mental and physical problems. This condition may result from a variety of causes such as spina bifida (myelomeningocele), aqueductal stenosis, and Dandy-Walker malformation. In addition, a number of cases result from genetic causes, other malformations, postinfectious conditions, or neoplastic conditions.<sup>[1]</sup>

In newborns and toddlers with hydrocephalus, the head circumference enlarges rapidly and soon surpasses the 97<sup>th</sup> percentile. Since the skull bones have not yet firmly joined together, bulging from anterior and posterior fontanelles may be present even when the patient is in an upright position. The infant exhibits fretfulness, poor feeding, and frequent vomiting. As the hydrocephalus progresses, torpor sets in, and the infant shows lack of interest in his/her surroundings. Later on, the upper eyelids become retracted and the eyes are turned downward ("sunset eyes"), due to hydrocephalic pressure on the mesencephalic tegmentum and paralysis

of upward gaze. Movements become weak and the arms may become tremulous. Papilledema is absent, but there may be a reduction of the vision. The head becomes so enlarged that the child may eventually be bedridden.<sup>[2]</sup>

This intracranial pressure builds up, may at times lead to the occurrence of epileptic attacks in childhood, which can cause a lot of harm to the growth and development of the child. They also cause a lot of physical trauma to the young, untrained, and unaware child, leading to parental mental agony. Therefore, timely management and appropriate treatment of such patients becomes a prime concern.

### Case Report

#### Findings and clinical features

A 3-year-old girl was referred to our department from pediatrics, with a history of tooth mobility due to intense clenching during epileptic episodes. The patient was admitted to the Pediatric Intensive Care Unit the day before with a history of severe epileptic episodes, for 3 days. The child was later diagnosed with congenital hydrocephalus.

On examination, teeth 61, 71, and 81 were clinically missing, with an apparent history

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of ingestion of the same. A traumatic ulcer, measuring 2 cm × 3 cm in size, was present on the lower lip with slough formation. Cheek biting was also present on buccal mucosa, bilaterally. An extraoral swelling was present over the left side of her face.

### Investigations

Chest X-ray was advised to rule out aspiration of 61, 71, and 81 and Dentascan (computed tomography) was advised to check for temporomandibular joint (TMJ) dislocation and jaw fracture. Mild TMJ dislocation was observed and opinion from oral and maxillofacial surgery was elicited.

### Treatment plan

It was decided to treat the child under general anesthesia, but the child was febrile and therefore the procedure was deferred for 2 days. During this period, the child had further lost 83, 82, 72, and 73 due to trauma, resulting from severe clenching of teeth. As the clearance for general anesthesia was elicited, the patient was scheduled to post for the planned treatment. After inducing, the oral cavity was inspected again, and the findings were, missing 61, 73, 72, 71, 81, 82, and 83, exposed mandibular anterior alveolus with several small fractured fragments, embedded in the lower alveolar mucosa and Grade I mobility in 52, 51, and 61 [Figure 1].

Considering the long-term benefits, a radical approach was decided for the patient. Coronoplasty was undertaken for 55, 54, 64, 65, 75, 74, 84, and 85 [Figure 2], while 53, 52, 51, 62, and 63 were extracted [Figure 3a]. The mandibular anterior alveolar region was debrided of the bone fragments and the bony spicules were removed by a bone rongeur and a bone file. The alveolar mucosa was sutured in place using 3–0 Vicryl sutures [Figure 3b and c]. Debridement of the lip injury was also done and the lip was approximated using 3–0 Vicryl sutures [Figure 3c].

On the postoperative day 1, the extraction sockets were seen to be healing uneventfully; the alveolar sutures and lip sutures were in position. The mucosal ulcers on the buccal and labial surfaces were also healing uneventfully, but the patient was still seen to be clenching. The next day, however, all sutures had loosened up. On postoperative day 3, all the sutures had loosened up further and the notching of the lip was again evident [Figure 3d].

It was therefore decided to resuture the lip and alveolar mucosa using 3–0 silk sutures for better retention and provide shield to avoid ill effects from clenching. Recording the patients' impression was not possible, and hence, a modified night guard appliance with lip shield was fabricated using a soft ethylene vinyl acetate shield on an ideal cast. For the fabrication of the modified night guard appliance, mock-up of the lip was done on an ideal deciduous dentition cast using modeling wax. The modeling wax was then covered with a layer of dental plaster to make it heat resistant. A soft ethylene vinyl acetate sheet was placed over the prepared cast and the

assembly was placed in the vacuum press, to form the appliance [Figure 4a and b]. The so-formed appliance was appropriately trimmed and made free of any rough or sharp edges. The patient was sedated using Pedicloryl syrup, and the sutures were placed along with a modified night guard appliance [Figure 4c]. On follow-up the next day, uneventful healing was seen at the suture sites, appliance usage was continued, and Rexidin M gel application was advised twice daily for 1 week.

The patient had come for the next follow-up after a week. By then, all the extraction sockets had healed completely; the patient had not had any epileptic episodes and was on regular medication for the same. Lower lip was completely healed and healthy granulation tissue was seen on lower alveolar mucosa [Figure 5].

On 1-month postoperative follow-up, healing was complete in the extraction sockets, lower lip, and the mandibular alveolar mucosa. The patient was reported to consume adequate solid diet. Oral hygiene, however, was poor, as plaque accumulation was seen and the parents were advised good home care for the same [Figure 6].

### Discussion

Epileptic attacks are a common finding in young patients with congenital hydrocephalus.<sup>[3]</sup> These young children suffering from seizures are extremely prone for traumatic injuries, especially of the orofacial region.<sup>[4,5]</sup> The documented extent of traumatic injuries has ranged from soft-tissue lacerations to fractured teeth. This case amplifies the judgments of clinicians with respect to the degree of damage an epileptic attack can result into. In few of extraordinary cases intraoral examination is not possible at the time of reporting due to medical condition which often compromises initial treatment planning, which usually is intended after general anesthesia. Furthermore, the comorbidities associated can shift the focus of immediate care to more systemic conditions, which may lead to further worsening of the oral findings as seen in our case.

Constant severe convulsions, young age, and decreased cognition due to congenital hydrocephalus make a child a poor candidate for the effective chair-side management, and the only possible mode of management is, therefore, pharmacological.<sup>[6]</sup> Pharmacological behavior management comprises (1) various levels of sedation using drugs (inclusive of oral and inhalation sedation) and (2) general anesthesia.<sup>[7]</sup> The goals of sedation in the pediatric patient for diagnostic and therapeutic procedures are to (a) guard the patient's safety and welfare; (b) minimize physical discomfort and pain; (c) control anxiety, minimize psychological trauma, and maximize the potential for amnesia; (d) control behavior and/or movement to allow the safe completion of the procedure; and (e) return the patient to a state in which safe discharge from medical supervision, as determined by recognized criteria, is possible.<sup>[8]</sup>

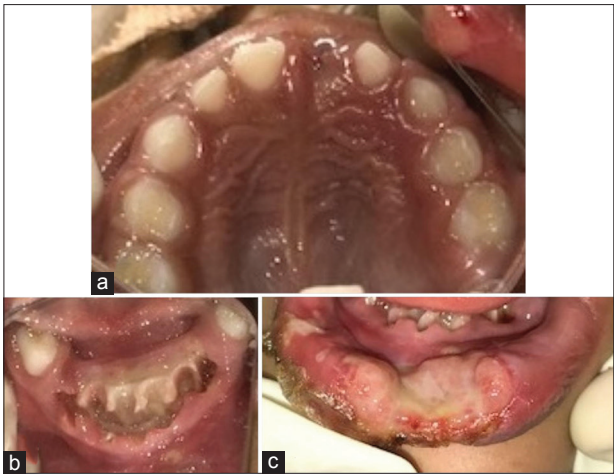


Figure 1: Preoperative intraoral pictures. (a) Maxillary arch. (b) Mandibular arch. (c) Injured Lower lip

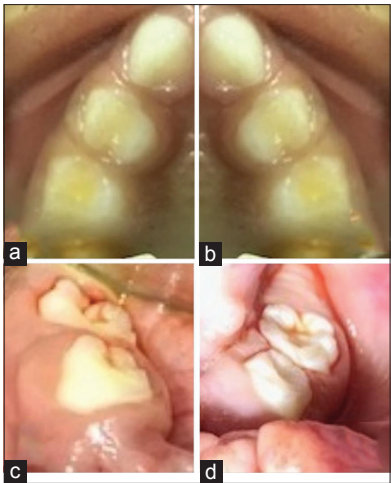


Figure 2: Coronoplasty done (a) 55, 54. (b) 64, 65. (c) 84, 85. (d) 74, 75

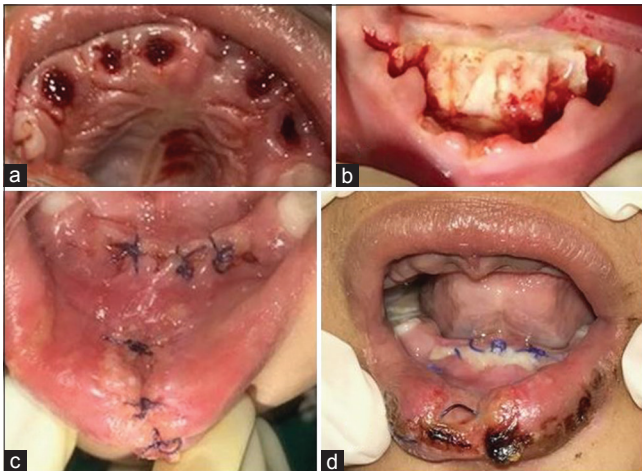


Figure 3: (a) Prophylactic extractions done in 53, 52, 51, 62, and 63. (b) Debridement and filing of mandibular alveolar bone. (c) Placement of alveolar and lip sutures. (d) Loosening of alveolar and lip sutures

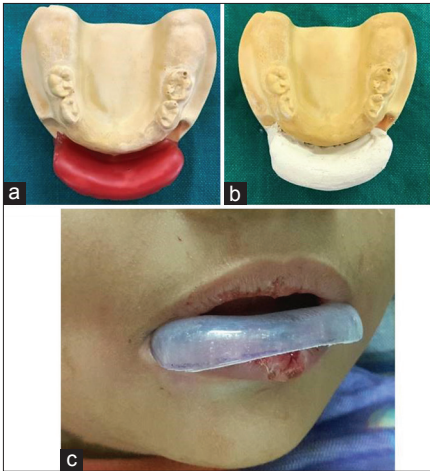


Figure 4: Cast mock-up for a modified night guard appliance. (a) Wax build up. (b) Application of a layer of plaster of Paris over the wax. (c) Placement of a modified night guard appliance to protect the newly placed sutures

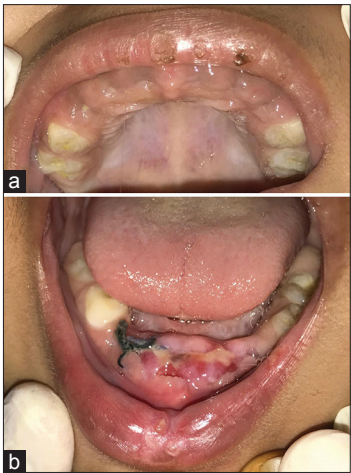


Figure 5: Follow-up after 1 week. (a) Completely healed maxillary arch. (b) Healthy granulation tissue in mandibular anterior alveolar region

These patients require long-term and definitive treatment options, as pharmacological management is not indicated

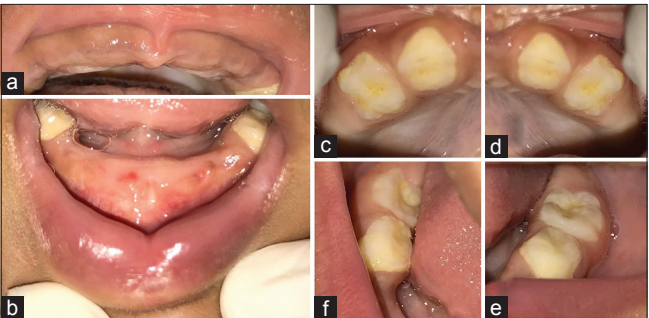


Figure 6: Follow-up after 1 month showing satisfactory healing. (a) Anterior aspect of maxillary arch. (b) Anterior aspect of mandibular arch and lower lip. (c) maxillary right posterior region. (d) maxillary left posterior region. (e) mandibular left posterior region. (f) mandibular right posterior region

time and again due to physical and monetary constraints. Thus, the treatment plan decided in our case was of a radical nature. This ensures more long-term health benefits than the conservative treatment options.



Continued clenching of teeth performed by the child resulted in loosening of all the sutures, which eventually required resuturing. To avoid loosening of the newly placed sutures and to facilitate healing of the traumatized oral tissues, a modified night guard appliance was thought off and fabricated. This night guard appliance facilitated avoidance of secondary traumatic injuries and also lessened the irritation caused by the suture material to the child which lessened the clenching tendency of the child.

Motivation of parents is of prime importance in treating medically compromised young children as follow-up plays a very big role in knowing the outcome of the treatment. Good healing following an injury to the teeth and oral tissues depends, in part, on good oral hygiene. Brushing with a soft brush and use of alcohol-free 0.12% chlorhexidine gluconate, topically on the affected area with cotton swabs twice a day for 1 week, are recommended to prevent accumulation of plaque and debris. Children may not complain about pain; however, infection may be present, and parents or caregiver should watch for signs such as swelling of the gums; if present, they should bring the children for treatment. Parents should also be sensitized regarding the possible complications in the development of the permanent teeth and future treatment options of the same.

## Conclusion

Treating such young medically compromised children, coming with extensive injuries, poses challenges to the pedodontist on numerous levels. A multidisciplinary and interventional approach is the key to treat medically compromised special child patient. A detailed health history to fully understand the patient's disease and the medications they are taking is essential. A comprehensive oral examination to diagnose dental problems and best possible definitive, long term treatment should be the aim of clinician.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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